AT-G-60

AIR TRAFFIC CONTROL TRAINING GUIDE

GENERAL

TOWER VISIBILITY
GUIDE

1 April 1995

FOREWORD

PURPOSE: This publication is for use in the training of USAF air traffic controllers and is not intended to replace, substitute for, or supersede official regulations, procedures, or directives.

SHERYL G. ATKINS, Lt Col, USAF
Chief, Air Traffic Control Operations Division

CORRECTIONS TO "AT" TRAINING SERIES

When you encounter an item that is not correct or needs clarification, write to us about it. Use this page and reference the series number, the page, and paragraph number. State briefly what is wrong and then write your correction or suggestion to correct or improve it. Detach this page from the booklet and return it to:

> HQ AFFSA/XAOT
> 1535 COMMAND DRIVE, SUITE D-304
> ANDREWS AFB, MD 20762-7002

You can also e-mail the above information to us at AFFSA.XAOT@andrews.af.mil. Also remember to browse the HQ AFFSA/XAO Homepage for information on current training news and products.   The internet address is http://andrews.af.mil/tenants/affsa/xao.htm.

TABLE OF CONTENTS

TOWER VISIBILITY GUIDE

INTRODUCTION

The National Weather Service (NWS) is responsible for all weather observations in the United States. DoD organizational elements within the U.S. Air Force (Air Force Weather), Marine Corps, and Navy take aviation weather reports to support DoD operations. The responsibility for taking certain observations is delegated to qualified Air Force observers. At control tower facilities, and under certain conditions, the tower controller becomes an Official Visibility Observer. To qualify, he/she is required to pass the Tower Visibility Certification Examination. It requires a passing score of 80% or better.

This guide is designed to teach the knowledge necessary to become a qualified Tower Visibility Observer.

This guide has been prepared in conjunction with the Air Weather Service (AWS) and the Air Force Flight Standards Agency (AFFSA).

STUDY THIS GUIDE CAREFULLY

OBJECTIVE

Upon completion of this guide, you will have gained the knowledge necessary to successfully complete the Tower Visibility Certification Examination.

INSTRUCTIONS

The instructions that follow outline the method for using this study guide. Complete the guide in accordance with these instructions; anything less will reduce its effectiveness and lessen the possibility of your attaining a passing score on the examination.

Only that information from the Air Force Manual 15-111, Volume 1, Surface Aviation Observations US Airways Code and Federal Meteorological Handbook No. 1 are necessary for you to perform tower visibility observations and have been included in this publication. No reference material is needed.

This guide is divided into three sections:

> A - Visibility
> B - Reporting Procedures
> C - Remarks

Each section includes study assignments followed by written exercises. The correct answers can be found at the end of this guide.

Section A

VISIBILITY

Visibility is of great importance to pilots when landing or departing. Low visibility affects airport operations and will influence decisions made by pilots and controllers.

Federal Aviation Regulations establish minimum visibility values under which certain aircraft operations may be curtailed. Since those engaged in aircraft operations or in providing aviation services are concerned with or affected by visibility, you can readily appreciate that it is one of the more important elements of an aviation weather observation.

Visibility is defined as: The greatest distance at which selected objects can be seen and identified.

There are several categories and types of visibility. Each has a technical meaning in a weather observation and a specified reporting procedure. Because of its importance, visibility is included in almost every aviation weather observation.

Since visibility observations are made so frequently, especially in periods of marginal weather conditions when the workload of other primary duties also increases, you should be so familiar with the procedure for determining and reporting visibility that it is second nature.

To begin, let's determine how visibility values are observed, measured, and reported. At land stations, visibility is always reported in Statute Miles and/or Fractions.

Visibility markers are used to determine the miles of visibility which will be reported. Visibility Markers are dark or nearly dark objects, e.g., buildings, hangars, etc., viewed against the horizon sky during the day-time, or unfocused lights of moderate intensity during the nighttime.

Insofar as possible, markers of the type described above should be used for determining visibility. TV or radio tower obstruction lights, etc., may be used as nighttime markers. Because of their intensity, focused lights such as ramp lights, high intensity runway lights, or auto head lights may not be used as markers. The degree of brilliance of focused lights may be used as an aid to estimate whether the visibility is greater or less that the distance to the light source.

Complete the following exercise.

EXERCISE 1

1. Dark or nearly dark objects against the horizon sky are suitable visibility markers
for _____ use.
                    (day/night)

Unfocused lights of moderate intensity are suitable for _____ use.
                                                                            (day/night)

2. Lights most suitable for nighttime markers are

        A. focused colored lights.
        B. TV tower obstruction lights.
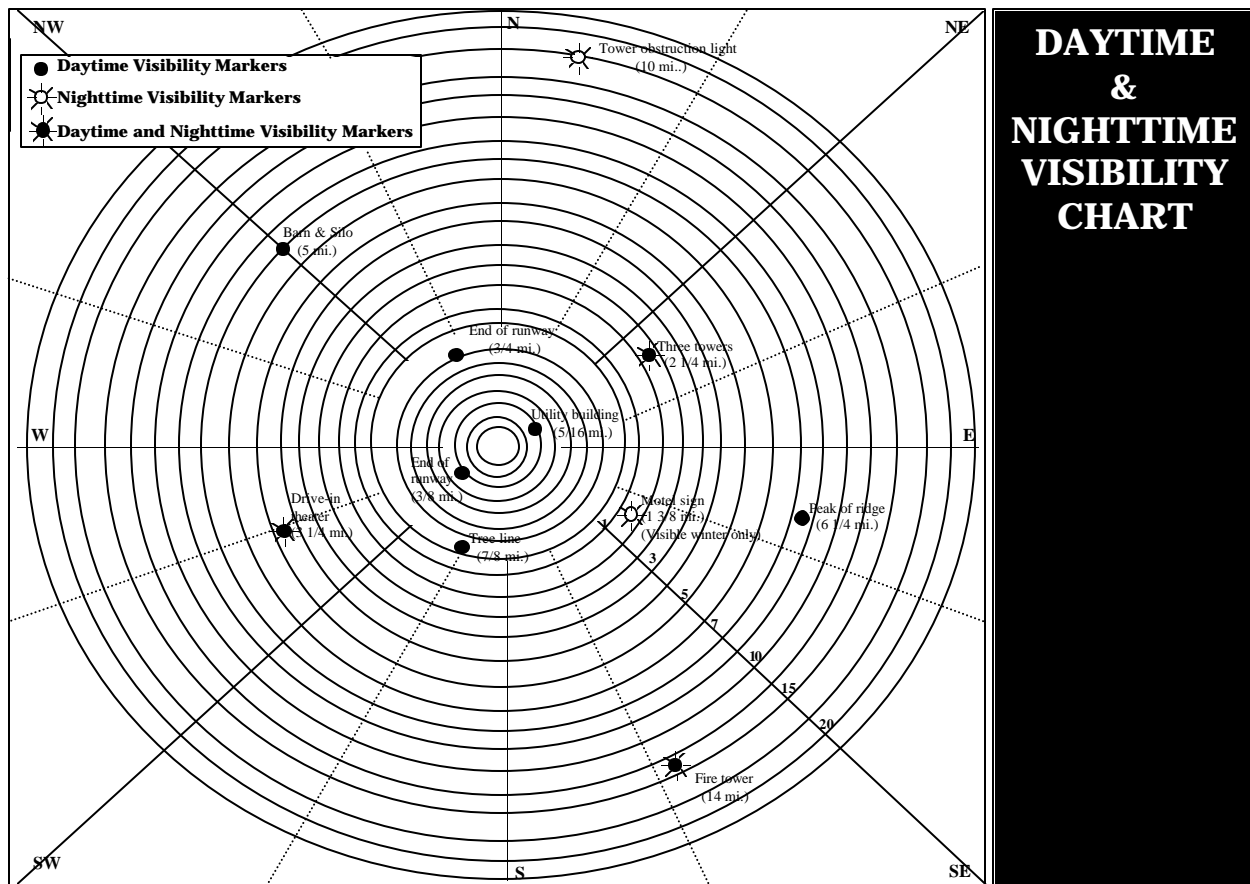   C. runway lights.

3. Visibility is defined as

        A. the greatest distance you can see objects.
        B. the greatest distance objects can be identified.
        C. the greatest distance selected objects are seen and identified.
        D. none of the above.

The answers to Exercise 1 are on page 26.

When tower a controller makes official visibility observations, there must be current visibility charts to determine both day and night markers, and the distance to them. In many cases panoramic photographs are used to supplement the visibility chart.

On the following page, you will find a sample visibility chart depicting daytime and nighttime visibility markers.

NW

N

NE

● Daytime Visibility Markers

☼ Nighttime Visibility Markers

◉ Daytime and Nighttime Visibility Markers

Tower obstruction light
(10 mi..)

Barn & Silo
(5 mi.)

End of runway
(3/4 mi.)

Three towers
(2 1/4 mi.)

W   **E**

Utility building
(5/16 mi.)

End of
runway
(3/8 mi.)

Drive-in
theater
(1 1/4 mi.)

Motel sign
(1 3/8 mi.)
(Visible winter only)

Peak of ridge
(6 1/4 mi.)

Tree line
(7/8 mi.)

3

5

7

10

15

20

Fire tower
(14 mi.)

SW

S

SE

**DAYTIME
&
NIGHTTIME
VISIBILITY
CHART**

7

In the table below, you will find the values used to report visibility. Remember, they are reported in statute miles and fractions at land stations. It is necessary for you to memorize the values listed below:

REPORTABLE VALUES (miles)
INCREMENTS OF

	1/16	1/8		1/4	1		5
FROM	0	3/8	1	2	3	10	15
	1/16	1/4		2 1/4	4	11	20
	1/8	1/2	1	2 1/2	5	12	25
	3/16	3/8		2 3/4	6	13	30
	1/4	5/8	1	3	7	14	35
	5/16	1/2				8	40
TO	3/8	3/4	1			15	etc.
		5/8			9		
		7/8	1				
		3/4					
		1	1 7/8				
		1 1/8	2				

If you determine the visibility to be between two reportable values, round it to the nearest reportable value. If the value falls exactly halfway between two reportable values, use the lower value.

Complete the exercise on the following page.

EXERCISE 2

1. A facility may have separate charts for daytime and nighttime observations.

     A. True
     B. False

2. Visibility at land stations is always reported in _____ miles and/or _____.

3. Fill in the blanks. Visibility values are reported in increments of

    1/16 from _____ to _____ mile(s).
    1/8 from _____ to _____ mile(s).
    1 from _____ to _____ mile(s).
    5 above _____ to _____ mile(s).

4. When the determined visibility is halfway between two reportable values, the _____ value
will be reported.   (lower/higher)

5. The visibility is determined to be 2 3/4 miles. The reportable value is _____.

The answers to Exercise 2 are on page 26.

To determine the visibility value, use all available markers and determine the greatest distances that can be seen in all
directions around the horizon circle. If you can just see and identify a marker, visibility in the direction of the marker
is about the same as distance to the marker, estimate the distance you can see and report this value as the visibility.
Base your estimate on the appearance of the markers. If the markers are visible with sharp outlines and little blurring
of color, the visibility is much greater than the distance to the markers.

For example: The most distant marker is located at 15 miles. Using the 15-mile marker as an aid, you estimate the
visibility to be 25 miles, report 25 miles.

Regardless of how you determine visibility, always round the observed visibility value to the nearest reportable value
listed on page 7 for reporting purposes.

Complete the following exercise.

EXERCISE 3

1. If the visibility marker is 12 miles but you estimate the visibility to be 32 miles, the visibility would be reported as

       A. 12.
       B. 24.
       C. 25.
       D. 30.

2. A visibility marker is visible at 3 miles; it is estimated the visibility is at 6 miles. This would be reported as:

       A. 1 1/2.
       B. 3.
       C. 5.
       D. 6.

The answers to Exercise 3 are on page 26.

As mentioned before, there are several categories of visibility. In this exercise, you will learn how to determine Prevailing and Sector Visibilities.

Prevailing Visibility is defined as: The greatest visibility equaled or exceeded throughout at least half of the horizon circle, which need not necessarily be continuous.

Prevailing Visibility Determination

We arrive at the prevailing visibility under conditions of uniform, non-uniform, and variable visibility.
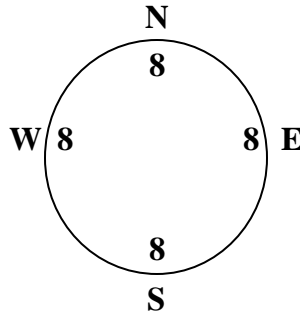
Uniform Visibility

When the visibility is the same in all sectors, the prevailing visibility is simply the greatest distance you can see.

Nonuniform Visibility

When the visibility is not the same in all sectors, visually divide the horizon into sectors of uniform values. The prevailing visibility will be the greatest value that is equaled or exceeded in sufficient sectors to comprise at least half the horizon circle.
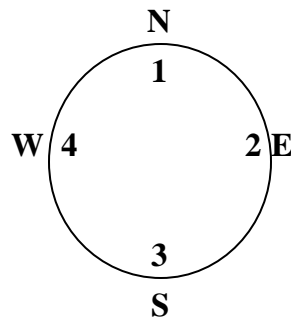
EXAMPLES

Uniform   prevailing visibility
Visibility   8 miles

```
        N
        8
   W 8      8 E
        8
        S
```

Non-uniform   4 prevailing visibility 3 miles
Visibility   3
                                                                           2
                                                                           1

```
        N
        1
   W 4      2 E
        3
        S
```

Complete the following exercise.

EXERCISE 4

1. Prevailing visibility is defined as

    A. the visibility within a specified portion of the horizon circle.
    B. the visibility determined from the usual point of observation.
    C. the greatest visibility equaled or exceeded throughout at least half the horizon circle, which need not necessarily be continuous.
    D. the average of all observed values.

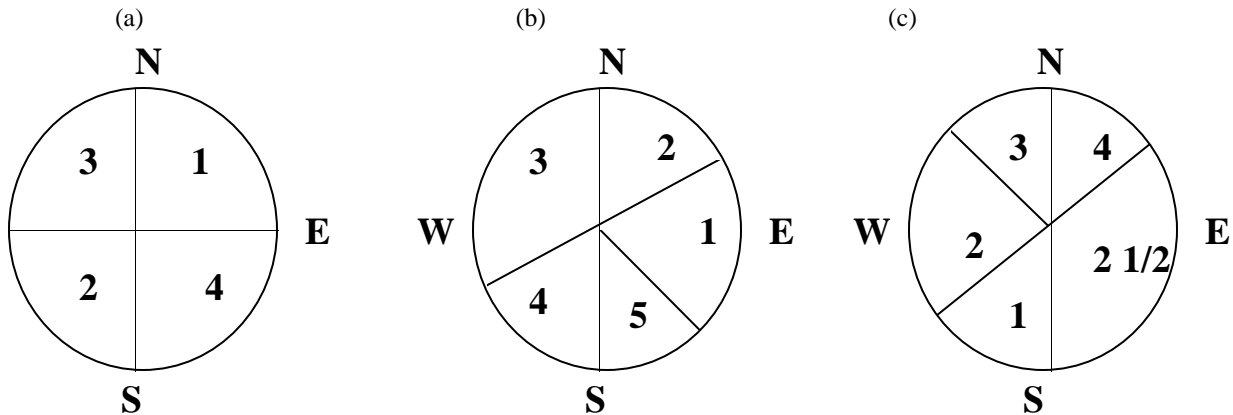2. Visibility by equal sectors is: N=1/4, E=1/4, S=1/8, W=1/2. Prevailing visibility is:

    A. 1/8.
    B. 1/5.
    C. 1/4.
    D. 3/8.

3. Prevailing visibility as depicted is _____ mile(s).

    A. 1
    B. 2
    C. 2 1/2
    D. 3

```
        N
        1
   W 2     2 1/2 E
        3
        S
```
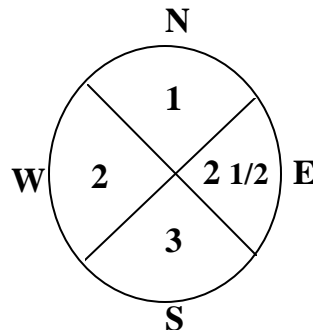
4. State the prevailing visibility to the nearest reportable value for each of the situations below.

(a)   (b)   (c)


5. Visibility by equal Sectors is N=1 1/4, E=1/8, S=1/4, W=1/2.

    a. 1/8.
   b. 1/4.
    c. 1/2.
    d. 1 1/4.

The answers to Exercise 4 are on page 26.

Sector Visibility is defined as: the visibility in a specified direction representing a 45 degree arc of the horizon circle.

When visibility is not uniform in all directions, determine sector visibility by dividing the horizon circle into sectors of approximate uniform visibility. For example, sectors in the figure below would be reported as VSBY NE1/2, when the 1/2 mile visibility actually covers angles of 22 1/2 degrees either side of NE. Always list sector visibility proceeding clockwise from north.
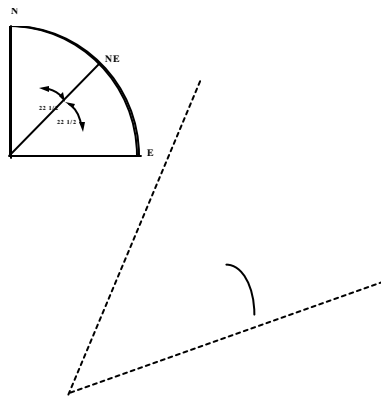
Some examples are shown below.
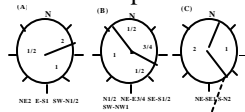
Notice in examples (A) and (C), north visibility values were included with clockwise values from the south and west. Only in example (B), when it had its own sector value, did it appear first.

Emphasis has been placed on referencing 8 points of the compass (N, NE, E, SE, etc.), but occasionally conditions may require use of 16 compass points, i.e., SSE, NNE, WSW, ESE, etc. However, the same sector procedures are used.

EXERCISE 5

1. Sector visibility is defined as the

    a. greatest distance at which selected objects can be seen and identified.
    b. greatest visibility equaled or exceeded throughout at least half the horizon circle which need
        not necessarily be continuous.
    c. visibility within a specified portion of the horizon circle.
    d. visibility determined from the usual point of observation.

2. In the following examples divide the horizon circles and encode the sector visibilities:
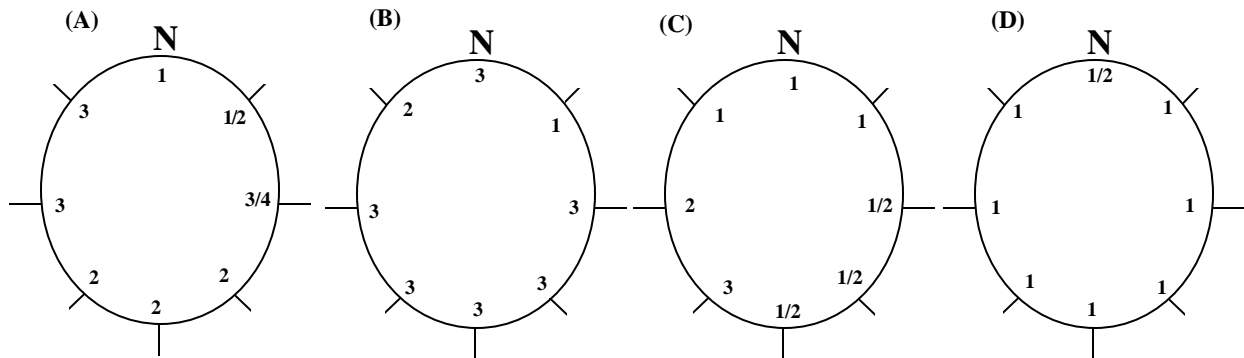
    A. _____
    B. _____
    C. _____
    D. _____

The answers to Exercise 5 are on page 26.

Variable Prevailing Visibility

When the prevailing visibility is variable (i.e., a condition when the prevailing visibility rapidly increases and decreases by one or more reportable values during the period of observation), use the average of all observed values as the reported prevailing visibility.

Reporting a Variable Condition

When the prevailing visibility is less than 3 miles and rapidly increases and decreases by one or more of the reportable values during the period of observation, suffix the average of all observed values with a "V" (for variable). The highest and lowest values will be reported in the Remarks Column separated by a "V" (i.e. VSBY 1 1/2 V 2 1/2).

Example

During the period of observation, you determine the prevailing visibility to be rapidly increasing and decreasing between 1 1/2 and 2 miles. The prevailing visibility would be reported as 1 3/4 and the limits of the variation would be shown in the remarks column as VSBY 1 1/2V2.

Complete the following exercise.

EXERCISE 6

1. The prevailing visibility is fluctuating rapidly between 2 and 3 miles. The visibility is encoded as

    a. 2 V.
    b. 3 V.
    c. 2 1/2 V.
    d. 3.

2. The visibility by equal sectors is NE=6, SE=3, SW=4, NW=2, the prevailing visibility is reported as

    a. 2.
    b. 3.
    c. 4.
    d. 6.

3. From the following list, select the statement that best defines variable prevailing visibility.

    a. Visibility determined from the control tower when the surface visibility is determined from
       another location.
    b. The average of the visibility values observed throughout the horizon circle.
    c. When the visibility rapidly increases or decreases by one or more reportable values during the
       period of observation.
    d. The greatest horizontal visibility prevailing throughout at least half the horizon circle which
       need not be continuous.

4. During the observation, the visibility rapidly increases and decreases between 1 and 3 miles. The
   prevailing visibility is

    a. 1.
    b. 3.
    c. the average of all the observed values.
    d. none of the above.

5. The prevailing visibility must be less than _____ miles and rapidly increasing the decreasing between
   one or more reportable values before it is reported as variable.

    a. 2
    b. 3
    c. 4
    d. 7

The answers to Exercise 6 are on page 26.

Section B

REPORTING PROCEDURES

During periods of critical visibility, the controller's responsibility is to report significant changes and be prepared at all times to give the ground observer the current visibility to incorporate in any recorded report.

Under certain conditions, many stations observe visibility at more than one location.

Surface visibility is determined from the usual point of observation. The Surface visibility is reported at nearly all stations.

Tower visibility is determined from the control tower level when the Surface visibility is determined from another location, e.g., the weather station.

Control Tower Observations and Actions

Tower personnel certified to take visibility observations shall notify the weather station when observed tower prevailing visibility decreases to less than, or increases to equal or exceed, 4 miles. When prevailing visibility at the tower or the surface is less than 4 miles, report all changes of one or more reportable values to the weather station.

When the tower visibility is less than 4 miles, use the lower of either the tower or weather station prevailing visibility for aircraft operations.

Weather Station personnel should notify the tower as soon as possible whenever the prevailing visibility at the usual point of observation decrease to less than, or increase to equal or exceed, 4 miles.

Complete the following exercise.

EXERCISE 7

1. While working in the tower, the weather service calls up and states. "The surface visibility is 3 miles." Do you, as the tower visibility observer have to report the tower visibility?

      a. Yes
      b. No

2. On the aviation weather sequence, you see the prevailing visibility reported as 15 miles but from the tower you determine the prevailing visibility to be 3 miles. Do you, as the tower visibility observer have to report the tower visibility?

      a. Yes
      b. No

3. Surface visibility is defined as the visibility determined from

      a. the tower.
      b. the usual point of observation.
      c. any point of observation.
      d. the surface.

Special Observation

Changes in conditions which are significant from the standpoint of safety and efficiency frequently occur between regularly scheduled observations. These changes require the weather observer to make special observations.

Criteria requiring special observations are divided into nine categories. As a tower visibility observer, you will be concerned with only one category, prevailing visibility.

When visibility criteria occur, you shall take the tower prevailing visibility and report this value to weather service.

Special observations are taken, recorded, and disseminated when prevailing visibility decreases to less than, or if below, increases to equal or exceed any of the following critical values: (MEMORIZE THEM).

. 3 miles
. 2 miles
. 1 1/2 miles
. 1 mile
. All published instrument approach procedure minima applicable for the airport. MAJCOMs may add visibility special criteria with MAJCOM requirements.

Remember: If the visibility is decreasing, it must drop below one of the values listed above. If the visibility is increasing, it must increase to equal or exceed one of the values.

Examples

A. The ILS minimum is 1/2 mile. The visibility was "0" but it has increased to 1/2 mile. A Special observation is required.

B. The visibility was 4 miles but decreased to 3 miles. This decrease does not require a special observation because it did not decrease to less than 3 miles.

C. The visibility was 1 3/4 miles. It has now increased to 2 miles. A special observation is required because the visibility increased to equal 2 miles.

Complete the following exercise.

EXERCISE 8

1. For purposes of making special reports due to visibility changes, the values above 1 mile that the observer needs to remember are

    a. 1 3/4, 2, 2 1/2.
    b. 1 1/4, 1 3/4, 2.
    c. 1 3/4, 2, 3.
    d. 1 3/4, 1 5/8, 2.

2. A special observation is required to report a change in visibility from

    a. 5 to 3 miles.
    b. 3 to 2 1/2 miles.
    c. 2 1/2 to 2 miles.
    d. 1 1/4 to 1 mile.

3. Indicate by checking yes or no whether a special is required for a change in visibility from

		Yes	No
a.	6 to 3	_____	_____
b.	2 1/2 to 3	_____	_____
c.	1 1/2 to 2 1/2	_____	_____
d.	2 1/2 to 1 1/2	_____	_____
e.	1 1/4 to 1	_____	_____
f.	3/4 to 1	_____	_____

The answers to Exercise 8 are on page 26.

Section C

REMARKS

There are times when the complete visibility picture cannot be furnished in the body of a visibility report. When this occurs, a more complete picture is covered in the REMARKS COLUMN. Because the remarks column gives a broader weather picture, it becomes a very important part of the sequence.

Sector visibility is included in the remarks column when the prevailing visibility is determined under nonuniform conditions and the sector visibility differs from the prevailing visibility, and is less than 3 miles, or is operationally significant.

In the remarks column, the contraction "VSBY" is to be followed by sector visibilities, beginning with north and continuing clockwise.

EXAMPLE: If the visibility by equal sectors is N=2, E=4, S=1, W=2 1/2, the prevailing is reported as 2 1/2 miles and in the remarks column: VSBY N2 S1.

Complete the following exercise.

EXERCISE 9

1. Sector visibility which differs from prevailing is reported in remarks when it is less than＿ mile(s) or operationally significant.

2. Sector visibilities are N=4, E=2 1/2, S=6, W=5, Prevailing visibility and a remark would be

    _____ .

3. If the prevailing visibility is 10 miles and blowing dust has reduced the visibility NE to 2 1/2 miles, the correct notation for this condition is

        A. no remark.
        B. 2 1/2.
        C. VSBY 10 NE 2 1/2.
        D. VSBY NE 2 1/2.

4. Visibility by equal sectors is N=5, E=2 1/2, S=2, W=3. The prevailing visibility and remarks are

        A. 2 1/2 and a remark, "VSBY E2 1/2 S2."
        B. 2 1/2 and remark, "VSBY N5 S2 W3."
        C. 3 and remark, "VSBY E2 1/2 S2."
        D. 3 and a remark, "VSBY N5 E2 1/2 S2."

5. Visibility is N-4, E-2 1/2, S-1, W=2. The prevailing visibility and remarks are

        A. 2 and remark, "VSBY E2 1/2 S1."
        B. 2 and remark, "VSBY N4 E2 1/2 S1."
        C. 2/1/2 and remark, "VSBY N4 S1 W2."
        D. 2 1/2 and a remark, "VSBY S1 W2."

The answers to Exercise 9 are on page 26.

Variable visibility is reported in the remarks column only when the prevailing visibility is variable and is less than 3 miles.

To report this condition, the letter "V" is suffixed to the prevailing visibility in the body of the sequence. In the remarks column, the word "VSBY" is followed by the limits of the variability separated by a "V".

EXAMPLE: The prevailing visibility is 1 mile and variable. The range of variability is 1/2 mile to 1 1/2 miles. This would be reported as: 1V and a remark "VSBY 1/2V1 1/2".

Complete the following exercise.

EXERCISE 10

1. The prevailing visibility rapidly increases and decreases during an observation from 3 to 5 miles. You determine the prevailing visibility to be 4 miles. The remark for this condition would be

        A. VSBY 3V5.
        B. no remark.
        C. VSBY VRBL.
        D. VSBY 4.

2. The visibility readily increases and decreases during an observation. The values observed during this period were 3 miles, 2 miles, 1 mile and 2 miles. The prevailing visibility would be reported as _____, and the correct remark is _____.

3. Before variable visibility is reported in the remarks column, the prevailing visibility must be variable and _____.

The answers to Exercise 10 are on page 26.

TOWER VISIBILITY EXAMINATION

1. Visibility is a term that denotes the greatest distance at which

    A. all objects can be seen and recognized.
    B. selected objects can be seen and identified.
    C. objects can be detected but not identified.
    D. all objects can be detected but not identified.

2. For determination of visibility during daylight hours, the preferred choice of markers should be

    A. objects which appear on the horizon.
    B. light objects appearing against a terrestrial background
    C. dark or nearly dark objects against the horizon sky.
    D. light colored objects.

3. Which type of lights may NOT be used as a night visibility marker?

    A. Building lights
    B. Focused lights
    C. Course lights of airway beacons
    D. Street lights.

4. If the visibility is between two of the reportable values, select the _____ value.

    A. lower
    B. higher
    C. nearest
    D. farthest

5. Visibility at land station(s) is/are reported in

    A. nautical miles and/or fractions.
    B. statute miles.
    C. nautical miles.
    D. statute miles and/or fractions.

6. Visibility of 3 1/2 miles is reported as

    A. 3.5.
    B. 3 1/2
    C. 4.
    D. 3.

7. When the prevailing visibility is exactly halfway between two reportable values, select the

    A. higher value.
    B. lower value.
    C. higher value and enter the lower value in remarks.
    D. lower value and enter the higher value in remarks.

8. Which of the following would NOT be entered as a visibility value?

   A. 15
   B. 7/8
   C. 100
   D. 3 1/2

9. Which of the following groups contain a visibility value NOT authorized for use in aviation weather
   reports?

   A. 1/16, 1 3/4, 100
   B. 7/8, 2, 75
   C. 0, 7/16, 3
   D. 3/8, 2 1/4, 2 1/2

10. Your most distant visibility marker is 7 miles. From the clearance of the atmosphere you estimate the visibility to
be 15 miles. The visibility you report is

   A. 14.
   B. 7.
   C. 10.
   D. 15.

11. The distance to the most distant visibility marker is 30 miles. You cannot see it but you can see a 20 mile marker
distinctly and estimate visibility to be 27 miles. Report the visibility as

   A. 30.
   B. 28.
   C. 25.
   D. 20.

12. An observer estimates (from the clearness of the atmosphere) that the prevailing visibility is 25 miles.
    A more precise evaluation is not practicable since the farthest visibility marker from the station is
    21 miles. Report the prevailing visibility as:

   A. 21.
   B. 20.
   C. 15.
   D. 25.

13. Prevailing visibility is defined as the

   A. visibility within a specified portion of the horizon circle.
   B. greatest visibility equaled or exceeded throughout less than half the horizon circle, which need
     not necessarily be continuous.
   C. greatest visibility equaled or exceeded throughout a specified portion of the horizon circle.
   D. greatest visibility equaled or exceeded throughout at least half the horizon circle, which need
      not necessarily be continuous.

14. Visibility by equal sectors is N=5, E=6, S=4, W=3. The prevailing visibility is reported as:

    A. 6.
    B. 3.
    C. 4.
    D. 5.

15. Visibility by equal sectors in N=6, E=5, S=4, W=3. Visibility is reported as:

    A. 5 and a remark, "VSBY W3."
    B. 4 and a remark, "VSBY W3."
    C. 5 and no remark.
    D. 4 and no remark.

16. Visibility by equal sectors is N-7/8, E=1, S-2 1/2, W=1 1/2. The prevailing visibility is reported as:

    A. 2 1/2.
    B. 1.
    C. 1 1/2.
    D. 7/8.

17. Visibility by equal sectors is N=3, E=2, S=1, W=1 1/2. This condition would be reported in a weather sequence as prevailing visibility.

    A. 3 and a remark, "VSBY S1."
    B. 2 and no remark,
    C. 1 and a remark, "VSBY S1 W1 1/2."
    D. 2 and a remark, "VSBY S1 W1 1/2."

18. Visibility by equal sectors is NE=6, SE=2 1/2, SW=3, NW=5. The prevailing visibility and remarks are reported as:

    A. 3 and no remark.
    B. 5 and a remark, "VSBY NE6 SE2 1/2 SW3."
    C. 5 and a remark, "VSBY NE6 SE2 1/2/ SW3 NW5."
    D. 5 and a remark, "VSBY SE2 1/2."

19. If the visibility is varying between 1 and 4 miles, the prevailing visibility is determined by:

    A. the lowest of all observed values.
    B. the highest of all observed values.
    C. an average of all observed values.
    D. the remarks.

20. Prevailing visibility is 3 miles, but is varying rapidly between 2 and 4 miles. This is reported as:

    A. 3V and a remark, "VSBY 2V4."
    B. 3 and no remark.
    C. 3V and no remark.
    D. 3 and a remarks, VSBY 2V4."

21. Prevailing visibility is suffixed by a "V" when it varies between reportable values and is less than:

    A. 1 mile.
    B. 3 miles.
    C. 4 miles.
    D. 5 miles.

22. Variable visibility describes a condition in which the prevailing visibility rapidly increases by one or more reportable values during the period of the observation. The prevailing visibility is reported as the:

    A. lowest of the values.
    B. average of all observed values.
    C. highest of the values.
    D. average of the extremes.

23. The prevailing visibility is 3/4 mile but varies rapidly between 1/2 and 2 miles. This is reported as:

    A. 3/4 and no remark.
    B. 3/4 V and a remark, "VSBY 1/2V2."
    C. 1 1/4 V and a remark, "VSBY 1/2V2."
    D. 1/2V2 and no remark.

24. The tower visibility is determined and reported when the visibility at

    A. either the tower or the usual point of observation is less than 4 miles.
    B. the tower is less than 4 miles.
    C. the usual point of observation is less than 4 miles, is twice or more than twice the value of the tower level, and is not restricted by obscuring phenomena with tops below the level of tower.
    D. the usual point of observation is less than 4 miles and is twice the tower visibility.

25. A special observation is NOT required when a visibility of:

    A. 10 miles becomes 3 miles.
    B. 1 1/4 miles becomes 2 1/2 miles.
    C. 1 mile becomes 2 miles.
    D. 2 miles becomes 3 miles.

26. A special observation is required when the visibility changes from:

    A. 2 1/2 to 3 miles.
    B. 0 to 1/4 mile.
    C. 2 1/2 to 2 miles.
    D. 1/2 to 0 miles.

27. A special observation is required for which of the following changes in prevailing visibility?

    A. 5 miles becomes 15 miles.
    B. 3 miles becomes 2 1/2 miles.
    C. 12 miles becomes 3 miles.
    D. 40 miles becomes 3 miles.

28. Prevailing visibility is 8 miles, but visibility to the west is two miles in ground fog. This condition is encoded as:

    A. 8 and no remark.
    B. 8V and a remark, "VSBY W2."
    C. 8 and a remark, "VSBY W2."
    D. 8V and no remark.

29. Visibility by equal sectors is N-5, E=2 1/2, S=2, W=3. Record the prevailing visibility and remarks as:

    A. 2 1/2 and a remark, "VSBY E2 1/2 S2.
    B. 2 1/2 and a remark, "VSBY N5 S2 W3."
    C. 3 and a remark, "VSBY E2 1/2 S2."
    D. 3 and a remark, "VSBY N5 E2 1/2 S2."

30. The visibility by equal sectors is NE=1/16, SE=3/16, SW=0, NW=1/8. Record the prevailing visibility and remarks as:

    A. 1/16 and remark, "VSBY SW0."
    B. 1/8 and a remark, "VSBY NE1/16 SW0."
    C. 1/4 and a remark, "NW1/8 NE1/16 SE3/16 SW0."
    D. 1/8 and a remark, "VSBY NE1/16 SE3/16 SW0."

31. The visibilities in four equal sectors are NE=3, SE=6, SW=5, NW=2. Record the prevailing visibility and remarks as:

    A. 5 and a remark, "VSBY NW2."
    B. 5 and a remark, "VSBY NE3 SE6 NW2."
    C. 4 and a remark, "NE3 NW2."
    D. 3 and a remark, "VSBY NW2."

32. The visibility by equal sectors is N=6, E=3, S=2, W=2 1/2. Record the prevailing visibility and remarks as:

    A. 3 and remark, "VSBY S2 W2 1/2."
    B. 2 1/2 and a remark, "VSBY E3 S2."
    C. 3 and remark, "VSBY N6 S2 W2 1/2."
    D. 2 1/2 and a remark, "VSBY S2 W2 1/2."

33. Sector visibility is included in remarks when it:

    A. differs from the prevailing visibility and is less than 3 miles.
    B. is less than 3 miles.
    C. is nonuniform and differs from prevailing.
    D. is different from prevailing and less than 4 miles.

ANSWERS TO PRACTICE EXERCISES

Exercise 1

1. day - night
2. B
3. C

Exercise 2

1. A
2. statute, fractions
3. 0 to 3/8; 3/8 to 2; 3 to 15; 15 to etc.
4. Lower
5. 2 3/4

Exercise 3

1. D
2. D

Exercise 4

1. C
2. C
3. C
4. A. 3 miles
    B. 3 miles
    C. 2 1/2 miles
5. C

Exercise 5

1. C
2. A. N1 NE1/2 E3/4 SE-SW2 W-NW3
    B. NE1 E-N3
    C. E-S1/2 SW-W2 NW-NE1
    D. N1/2 NE-NW1

Exercise 6

1. C
2. C
3. C
4. C
5. B

Exercise 7

1. A
2. A
3. B

Exercise 8

1. C
2. B
3. A. no
    B. yes
    C. yes
    D. yes
    E. no
    F. yes

Exercise 9

1. 3 miles
2. 5 and a remark, "VSBY E2 1/2"
3. D
4. C
5. D

Exercise 10

1. B
2. 2V and a remark, "VSBY 1V3"
3. less than 3 miles

ANSWER TO TOWER VISIBILITY EXAMINATION

1. B
2. C
3. B
4. C
5. D
6. D
7. B
8. D
9. C
10. D
11. C
12. D
13. D
14. D
15. C
16. C
17. D
18. D
19. C
20. B
21. B
22. B
23. B
24. A
25. A
26. A
27. B
28. C
29. C
30. D
31. A
32. A
33. A